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# ‘WASTE NOT, WANT NOT!’: QUALITATIVE INSIGHTS INTO CONSUMER FOOD WASTE BEHAVIOUR

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## ABSTRACT

Food waste is generated in large amounts across the food chain, ensuring serious environmental, social and economic consequences. Although consumers are the single biggest contributors, little is known about the drivers of food waste in households. This study utilises a qualitative approach to explore attitudes and beliefs towards food waste, identify associations between personal psychological factors and behaviour and establish consumer knowledge, understanding and awareness of food waste. Thematic analysis enabled further consideration of the attitude, normative and control beliefs in relation to household food waste behaviour. Findings suggest that all the dimensions of attitudinal beliefs have, to a greater or lesser extent, relevance to deeper understanding of behaviour in this context together with the moral and environmental implications of domestic food waste. The study provides additional theoretical insights into how people behave in relation to wasting food in their own homes. The findings can be taken into account in terms of influencing policy and marketing communications aimed at changing individual wasteful behaviour. Additionally, this research contributes to understanding of pro-environmental and moral values in relation to global sustainability concerns, as well as establish the level of consumer knowledge, understanding and awareness of food waste.

*Keywords:* household food waste, attitudes, behaviour, pro-environmental concern, moral identity, domestic food planning.

## 1 INTRODUCTION

One of the global challenges of the twenty-first century is managing the food demand of the rapidly growing population, whilst reducing its many adverse impacts on the environment [1]–[3]. A key aspect of this relates to the wasting of food by households which by its very nature exacerbates the pressure on the food supply chain and has significant implications for environmental sustainability. Although recording wastage accurately is difficult, it is estimated that up to 50% of all food produced is wasted worldwide [4]. Historical consideration of the general handling of food and measures which were implemented to overcome the wastage of food can be found in the literature as early as the nineteenth century [5], [6]. Traditionally, reducing waste and reusing materials were part of household practices, but during the second half of the twentieth century, these practices were largely abandoned, with households discarding increasingly more [7]–[9]. Much seems to have changed nowadays, with current research [10], [11] showing that the UK households throw away 7 million tonnes of food and drink annually, equivalent to 19% of the total annual food purchased. The subsequent high environmental impact results from the fact that food waste is biodegradable, causing it to be the biggest source of the greenhouse gas methane, which contributes significantly towards the problem of global warming [12]. At the same time, there is the problem of landfill availability, as waste reduction is currently considered in terms of diversion from landfill to recycling and composting; studies suggest that there are limits to how further recycling can generate significant improvements in the reduction of waste [13], [14]. Furthermore, food waste has social impacts, as in a global food industry the demand in one area of the world indirectly affects resources in others. Therefore, wasteful



behaviour in the developed countries invariably affects the food availability in the developing countries [15].

Studies suggest that the global mass-producing food economies, and the high level of industrialisation of food systems, have led to an unintended disconnectedness between consumers and food [16]. Consequently, the behaviour of wasting food may be related to embedded knowledge of how we think about and understand food within the context of everyday life. An understanding of current actions involved in wasting food at the consumer level is required to change behaviours, with some researchers arguing the food waste problem is one likely to be resolved only when policies are based on a clear understanding of what factors influence individual intentions and behaviours. So far, food waste has been predominantly regarded as a practical issue that needs to be managed and so engagement has occurred under the umbrella of environmental policies and planning. The emphasis has been on questions of governing and evaluating waste policies and their consequences, as well as assessing the potential for recovering waste material through composting; one such approach looked at increasing consumer perceptions about sustainability issues through the use of campaigns aimed at raising awareness and increasing general knowledge and understanding about the problem [17], [18]. Therefore, this research aim is to investigate factors that can potentially influence individual food waste behaviour at home, whilst examining the relevance of attitudinal, normative and control beliefs in developing environmentally responsible behaviour in the context of food waste. The study uses a qualitative approach to establish consumer knowledge, understanding and awareness of food waste. Furthermore, additional predictors of behaviour are examined, together with the likely moderating effect of sociodemographic factors.

## 2 THEORETICAL APPROACH

Many issues that pose a threat to environmental sustainability are rooted in human conduct and therefore can be managed by changing the relevant behaviour in order to reduce its environmental impacts, such as changing purchasing behaviour or adopting countervailing household actions [19]–[22]. Behavioural change is at the base of the waste hierarchy, with policy requests to reduce, reuse and recycle. Numerous studies though argue that waste behaviour is a complex issue and present approaches are adopting an over-simplistic view in their consideration of the problem [23]–[25]. Nevertheless, changing behaviour is perhaps one of the most important pragmatic tasks, as inadequate individual behaviour can often lead to problems for an entire group or even have wider societal and global implications. To this end, extant research suggests that changing individual behaviour can occur by making it easier for the individual to perform the desired behaviour or more difficult to perform competing behaviours [26]; to convince individuals to perform the desired behaviour [27]; and to influence social networks or dynamics [28].

To date, most efforts to support sustainable consumption have been based on the rational-choice model of consumer behaviour, which states that consumers always make rational decisions with the goal of maximising their economic self-interest. In response, governments traditionally advocate for providing more and better information to consumers (e.g. labelling schemes, outreach) under the belief that if individuals just had access to better information, or were forced to change, they would make more sustainable decisions. However, these programme and policy actions, which stem from the rational-choice model, have been labelled by Jackson [29] as incomplete and perhaps even naive. He argues that fiscal incentives and information campaigns are helpful only if part of a larger strategy, and are insufficient on their own to spark pro-environmental behaviour change of the kind and scale required to meet the existing challenges. Prescriptive cognitive models were first developed



in the 1960s, due to the increased focus on beliefs and attitudes as determinants of consumer buying behaviour. The most widely referenced prescriptive models are the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB), which aim at providing frameworks to organise how consumer behaviour is structured. According to [30] theory, behavioural intentions are the best single predictor of the process behaviour. Behavioural intentions are a function of attitude toward performing the behaviour and the subjective norm which expresses the individual's perception of whether the relevant others think they should or should not perform the behaviour. When an individual's behaviour is volitional, the TPB proposes that intention can be predicted by three primary antecedents: the individuals' attitudes towards the behaviour, their subjective norms, and their degree of perceived behavioural control (PBC), a construct formed by combining the perceived presence of factors that may facilitate or inhibit the performance of the behaviour and the perceived power of each of these factors. Given that the TPB has as a basic assumption the fact that more often than not people act in a rational manner by using available information and considering the implications of their behaviour, the model has been widely employed in numerous studies and has a rich history of use in the area of behaviour change with respect to social causes [31]–[35].

### 2.1 Attitudinal, normative and control beliefs

Attitudes refer to the individual's positive or negative feelings about performing a behaviour and are determined through an assessment of the beliefs regarding the consequences arising from a behaviour and an evaluation of the desirability of these consequence [36]. It reflects a favourable or unfavourable psychological tendency, and plays an important role in forming individual intentions. From a normative belief aspect, the assumption is that when individuals see the reference groups of peers generating similar amount of waste, they might find their own behaviour to be socially acceptable; therefore behaviour is likely to be modified when individuals are aware of a given social norm and, more critically, accept this norm. The control beliefs trait, similar to the PBC, refers in our context to the individuals' belief in their capability to reduce waste in the home. The idea is that their own belief would contribute towards not only forming a stronger intention to reduce waste in the future, but also may have a direct influence on the actual behaviour. Control beliefs are assumed to reflect the obstacles that an individual encountered in past behavioural performances and, in addition to contributing to behavioural prediction, they are assumed to influence a person's intention to reduce food waste. That is, people with higher perceived control are more likely to form intentions to perform a particular action then they also perceive that they have little or no control.

### 2.2 Food planning management

Empirical research shows that the amount of food wasted in the home is directly influenced by specific approaches to food planning management that households undertake. These can be grouped in three distinctive areas, depending on the stage of food planning activity – pre-shopping, shopping and post-shopping – with each one of the stages consisting of specific actions that individuals undertake. In the pre-shopping stage, households engage in behaviours such as checking their stocks, making shopping lists or planning their meals in advance, which research has shown to have a negative influence on the amount of food waste generated at the household level. The pre-shop planning is important, as people tend to conduct these activities in the environment of their own households. In this context, they are



not influenced by the in-store temptations and they can be more rational when deciding what they need and when they are going to consume those items. If households plan their shopping trips they might not be as tempted when they are in store, and thus end up buying less food, which in turn will have a direct effect on the amount being wasted. In the shopping stage, one of the key factors leading to food waste is buying too much food. Research suggests that overbuying is directly influenced by retailers through promotions and discounts. There are also other reasons that may help explain why people buy too much, such as effects of hunger whilst shopping and lifestyle choices. When people go shopping on an empty stomach they tend to buy much more than they would otherwise; this is a manifestation of the projection bias that affects individuals' decision making, meaning that people have a tendency to exaggerate the extent to which their future tastes will be similar to their current ones. During the post-shopping stage, households engage in behaviours such as using leftovers, cooking and storing. In the UK, many people admit that they do not have the skills to cook or prepare only the amount of food that is necessary for their household, and that they often prepare portions that are too large. Moreover, individuals perceive food waste as being a consequence of consumption that cannot be avoided. This, combined with the difficulties they have in cooking and buying only the required amount, leads to higher amounts of food being disposed.

### 2.3 Sociodemographic influences

Identifying differences between sociodemographic groups could help understand the complexities of household food waste generation, how people act, and which factors influence their behaviour. Exploring the differences between sociodemographic groups can identify best practices to support individuals to reduce their food. Several studies have considered the influence of sociodemographic factors and the quantity of food that household waste and a number of these factors have been found to explain some of the variations in the amounts of food waste at the household level [11], [36]. Regarding household size, studies suggest that the average amount of food waste increases with the number of occupants, as larger households tend to buy and prepare more food [11]. It is generally agreed that there is a relation between the number of people in households and the quantity of food wasted. Nevertheless, larger households waste less per capita than smaller households, most likely due to economies of scale achieved by the former [65]. The findings of the impact of the household income vary, with early research showing no significant relation between the income and the amount of wasted food. Yet more recent studies show that wealthier households generate more food waste and household with low income [36], [37].

The literature suggests that the presence or percentage of children in the household positively correlates with the quantity food wasted [10], [11], [38]. Indeed, a number of studies have suggested that parents regularly buy more than is needed in order to provide a wide selection even if it means some of it may be wasted, and even intentionally cooking more than needed so that second helpings are always available [39], [40].

Age has been shown to be negatively correlated with the quantity of food wasted. Younger people have been found waste the most whilst older people generate smaller amounts. Recent studies showed that although differences exist in the types of food wasted, in general younger people (18–34 years old) waste more due to cooking, preparing and serving too much, whilst older people (over 65 years old) had a higher proportion of food being thrown away due to not being used in time. Nevertheless, and contrary to popular assumptions, older people found not to be concerned over wasting food more than young people. However, they seem to be better equipped in terms of skills and knowledge and have more time, to act on these

concerns. Not all studies however agree on the effect of gender on the adoption of food waste behaviours. When researching intentions not waste water for example, women were found more environmentally conscious [40]. A more recent study by WRAP [10] found no relationship between gender and levels of waste, although it was reported at households that included female respondents had around 22% more food waste than those with only male respondents.

### 3 METHODOLOGY

Following the essentialist interpretation paradigm [41], the researchers were interested in hearing the voices of individual participants who may speak with, or in contrast to, other participants. A qualitative approach is appropriate for this study due to the overall investigative nature of its aim; focus group data in particular allows a closer understanding of the essential meaning of participants' lives compared to data generated by other research methods. Within this framework, focus groups offer valuable means of understanding the individual and social context [42] and enables researchers to examine how such understandings differ by social groups. In addition, they allow exploration of epistemological assumptions about the subject and offer a more critical and reflective framework for research on attitudes. The focus group interview works because it taps into human tendencies. Individuals, as products of their environment, are influenced by people around them and for that reason, focus groups are particularly suitable for exploring issues such as food waste behaviour in the home, 'where the complex patterns of behaviour motivation are evident' and 'where diverse views are held' [43]. Attitudes and perceptions are developed in part by interaction with other people, as individuals may need to listen to the opinions of others before forming their own personal viewpoint. Topic dependent, an individual may be reluctant to discuss contradictions during an in-depth interview where the main dynamic occurs primarily between the researcher and the participant. However, when the interaction occurs mainly between participants themselves, such in a focus group setting, participants are likely to be more open about differences and the motives why this might be. Recently, Krueger and Casey [44] argued that the permissive group environment gives individuals licence to divulge emotions that rarely emerge in other forms of questioning. Even more, the interaction that occurs in a focus group 'accentuates empathy and commonality of experiences and fosters self-disclosure and self-validation' [45]. Therefore, a study using seven focus groups was undertaken in order to probe respondents' attitudes and beliefs towards food waste and identify associations between these personal psychological factors, intentions and behaviour.

#### 3.1 Sampling procedure

A purposive sampling method representing a mix of characteristics was employed, to encompass diversity and compose a structured rather than random sample, guided by the particular research questions which the study is addressing. It is considered important to include demographic diversity and to make particular efforts to include the voices which might be otherwise excluded. This decision follows Patton [46], who argue that the purposive sampling method 'adds power' to focus groups research because it selects 'information rich cases' which can best generate the desired data. The sampling frame for this study was defined by age, gender, household size and employment status. In the end, 48 participants attended their respective sessions; such small sizes are common in qualitative research and have proven useful for interpretive studies that seek, as this study does, to explore the participants' practises and their significances [47]–[49], whilst also being appropriate where the overall aim is to gain more understanding about a particular phenomenon [50].



Studies suggest that focus groups are best conducted when participants are similar to each other [50], [51]. As the rule for selecting focus group participants was commonality not diversity, this homogeneity was reinforced in the introduction to the group discussion. The discussions were semi-structured following Patton's [46] and Krueger and Casey's [44] recommendations for the use of open-ended questions to allow the respondents to choose the manner in which they respond. Before the sessions commenced, participants were required to read the study information sheet, which contained information on the study procedure, confidentiality and the right withdrawal. If participants opted to continue, they were asked to sign a consent form. The enquiries were guided in the following areas: general food planning activities, general views on societal food waste, and thoughts and feelings regarding throwing food away in their own households. The prepared questions were used only as a guide or to elicit further discussion of specific topic areas, if and when appropriate. The topics of discussion in the focus groups were arranged in a predetermined order and followed a natural, logical sequence. Discussions lasted one and a half hours on average and were recorded and transcribed verbatim, as suggested by Poland [52].

### 3.2 Analysis design

Transcripts were coded using analytical procedures to identify thematic categories underpinning consumers' attitudes, beliefs and behaviours with regard to household food waste. Thematic analysis is referred to as a method for identifying, analysing and reporting patterns or themes within the data [52] and is perceived as a foundational method for qualitative analysis [52], [53]. Open coding was undertaken in this study to assign initial conceptual labels to the text. New instances in the data were compared to the data already assigned to codes and, when similar conceptual labels were assigned. These were compared with existing codes to assess consistency, develop an understanding of the core meaning of each concept, and to help refine the labels attached to these concepts. Secondary, axial coding was used to connect initially identified open codes and allowed to find themes in the data, following recommendations from [54] of employing axial coding as a way of organising the data together by making connections between the major category and its subcategory.

## 4 FINDINGS AND DISCUSSION

The focus groups analysis allows the researchers to conclude that there is a real lack of clarity on what constitutes food waste in the home. The conceptual limitations of the wasting of food suggests that individuals distance themselves from the idea of food waste being a problem within their own homes and transfer the blame somewhere else. This particular lack of knowledge highlighted by the focus groups is in line with previous research that suggests that, although various classifications do exist in the literature, there is an imperative need to reach a consensus on a definition of what precisely constitutes food waste in the household [55]–[57].

Analysis of the focus group data enabled further understanding of the attitude, normative and control beliefs in relation to household food waste behaviour. In terms of attitudinal beliefs, many participants held negative attitudes towards food waste and admitted to feeling upset, guilty and even angry about the major global problem that wasting food has become. As previous research indicates [58], the vast majority of individuals experience some degree of guilt and unhappiness when rationalising the issue. Nevertheless, most continue to engage in wasteful behaviour even when the overall attitude towards the food waste issue is quite strong. However, further investigation revealed that the financial aspect is perhaps the more important determinant in regard to individual negative attitudes towards wasting food at home.



The findings in relation to normative beliefs was less conclusive, with some evidence of both positive and negative influence. As expected, close family members tend to have a relatively high influence in forming initial beliefs and the majority of participants admitted to having integrated these beliefs into their own current behaviour to a certain degree, whilst also admitting that the desired behaviours (i.e. not wasting food at home) did not always materialised. A clear inference can be made at this point, that children are indeed strong influencers. Although previous research has recognised the relationship between the presence of children and the amount of food waste generated by households, generally children have been seen as one of the main force in driving up the amount of waste. This study however suggests that, whilst that may be the case, children are also, and increasingly, the driving force behind parents becoming more engaged with the food waste issue. At the same time, a broader societal outlook on the issue of wasting food seemed to influence individual views. A strong sentiment amongst the participants was that overall society does not seem to care and that, even when people become more conscious about the seriousness and gravity of the food waste concern, there is still a tendency to blame someone else for the waste problem.

Identified control beliefs suggest a number of factors that limit the degree of control over food waste avoidance behaviour, thus making it difficult to reduce the extent of domestic food waste. As previous studies [59]–[61] suggest, situational and lifestyle factors are the main inhibitors, whilst financial factors are perhaps the most important cause in trying to reduce the amount of food waste in the home.

Although majority of participants indicated a strong belief in their own capability to manage the issue, they also confessed that sometimes they felt unsupported in their home and admitted that the approval of own family members would contribute to a significant change in individual, as well as household behaviour. Further, there was some evidence of a real lack of engagement with issues surrounding food waste, with many participants agreeing that tackling food waste was not a priority in their lives at this particular time. Even more, because they were already behaving sustainably in other ways (i.e. recycling or composting), they felt it was fine to throw food away as long as this was not done on a regular basis. In contrast, some mentioned feeling guilty whilst for others, the moral aspect of food waste conjured up mental images, such as the picture of children dying of hunger or homeless people. Indeed, those participants that seemed to actively avoid generation of large amounts of food waste appeared to have a clear and salient idea of what it means to be a moral person. Some also indicated that their motivation was a more recent development resulting from becoming increasingly aware of the negative environmental and social impact of food waste. Consequently, participants admitted to feeling remorseful when their behaviour resulted in food going to waste. This is in line with earlier research which argued that individuals with more positive general environmental values and attitudes are more likely to have higher levels of ‘non-waste’ behaviour [62], [63]. The moral considerations raised during the focus groups, such as homelessness, seemed sufficiently important for some participants to translate into a direct change in behaviour (i.e. noticeable decrease in the amount of food waste generated by the household). However, the admission that the behaviour was not sustained in the long term may suggests that although morality can play an important part in initiating the desired behaviour, further elements are needed to successfully sustain it.

Habits, either whilst shopping or within the home, were also mentioned during the focus groups as being important contributors to the actual amount of food wasted within the home. Behaviours such as buying larger quantities of salad in a desire to follow a healthier diet, buying more food products than initially planned just because of the offers available at the time, and even the inability to see clearly the fridge contents at home, were all cited as being strong determinants on the amount of food waste ultimately generated at home. People who





do not check their food stocks prior to the shopping trip are put in the position of estimating their inventory, from memory, when they make the purchase decisions in the store. However, earlier studies suggest that the process of estimating inventories is biased and could lead to either overstocking (in the case of stockout adverse households) or to stockout (in the case of overstock adverse households) [64]. Overstocking is an important contributor to food waste since it increases spoilage of food in the overstocked categories. During the focus group discussions, a larger proportion of participants admitted to frequently underestimate their stock, which made them buy items they already have at home, and so increasing the food spoilage rate.

Preparing a shopping list before going shopping is another behaviour that can influence the food waste, as the shopping list can help individuals to be more organised in store and only buy what they need. A 2007 WRAP report indicated that 36% of people reported preparing a shopping list prior to shopping and sticking to it whilst they were in the shop [64], with a more recent survey revealing that households that use shopping lists tend to waste less overall [10]. Many focus group participants recognised that, when planning their meals in advance of the shopping trip, they should be more organised regarding the type and amount of food items that they need to buy in order to have the right amount of food items required. Another important aspect in the post-shopping stage mentioned during the focus groups was the storage capacity. Previous research argued that storage space capacity is positively correlated with the amount of food wasted [64]. The focus groups analysis suggests that households with larger cupboard/fridge capacity tend to waste more in comparison with low storage capacity households, as large storage capacity households often engage in inefficient consumption of the purchased food items by neglecting or forgetting some of the already purchased food.

Regarding sociodemographic differences, this study supports previous research findings [64] whilst also arguing that the presence of children is in fact a stronger influencer than previously recognised. Moreover, this study found younger people to be equally concerned with the food waste issue as the older participants. Nevertheless, earlier arguments [10] that older people had a higher proportion of food being thrown away due to it not being used within the recommended date, are supported by this study.

## 5 CONCLUSION

Although the issue of food waste has been receiving increased attention from governments and international institutions in an effort to decrease the amounts generated by households, at present there is a lack of research investigating this from a consumer behaviour perspective. Given that the aim of this study is to explore the nature and extent of food waste behaviour at home, the findings here provide additional theoretical insights into how people behave in relation to wasting food in their own homes. Prevention of food becoming waste is perhaps one of the most realistic actions that could be achieved through changing consumer habits (such as purchasing less, eating the right size portions or reusing leftovers), and having a clear understanding of why and what we waste, could prove critical to changing consumer behaviour to prevent food waste. Wasting food behaviour is related to embedded knowledge of how individuals understand and think about food within the context of everyday life. The results of this study can be taken into account in terms of influencing policy and marketing communications aimed at changing wasteful behaviour at home. Additionally, as a contextual applied study, this research contributes to understanding of pro-environmental and moral values in relation to global sustainability concerns.

The findings of this research are concordant with, but extend upon previous research. The household food waste problem is worldwide in its prevalence, and it is widely acknowledged



in the literature that the behaviour of individual households is vital to reducing waste. At this level, a combination of influences, which may be fundamentally economic in many situations, may be the predominant factors in guiding behaviour. Notwithstanding this, there is evidence to suggest that all the dimensions of attitude are, to a greater or lesser extent, relevant to deeper understanding of behaviour in this context together with the environmental and moral implications of domestic food waste. Identifying the factors that influence food waste in the home is an important aspect of understanding how the desired behaviour might be influenced to ultimately help reduce its incidence and the considerable environmental impact that it has. Sociodemographic factors appear to be relevant in influencing this, although these may moderate rather than drive behaviour. Although pro-environmental and moral values were only debated in an exploratory way, pre-existing literature provides scales that could be used through a quantitative study to more substantively measure the effects of these factors.

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